

THE ZOOLOGIST

No. 815.—May, 1909.

A LIST OF THE ZOOLOGICAL GARDENS OF THE WORLD.

BY CAPTAIN STANLEY S. FLOWER.

(PLATE III.)

- | | |
|-------------------------------|---------------------------------|
| I. Preface. | III. Modern Zoological Gardens. |
| II. Early Zoological Gardens. | IV. Bibliography. |

I. PREFACE.

CONSIDERING the wide interest taken in Zoological Gardens, not only by zoologists but also by the general public, it seems remarkable that no list of these institutions, with any pretension to completeness, appears to have been published.

It is hoped that the publication of this present list will call attention to the subject, and may be the means both of bringing to light historical notes of other old menageries, unknown to me but perhaps familiar to some readers of 'The Zoologist,' and also be of present and future use to the executive officers of Zoological Gardens in exchanging notes and publications, and especially in making that personal acquaintance of each other which is so important for mutual help and improvement in professional knowledge.

Of the existing Zoological Gardens, the senior appears to be the Imperial Menagerie of Schönbrunn, Vienna, founded in 1752, then that of Madrid 1774, and then Paris 1793.

Early in the nineteenth century a quite new departure was made in the British Isles by the establishment of standing menageries that were neither the appendages of Royalty nor Government institutions. Between 1828 and 1836 five Zoological Gardens, owned by societies of private individuals, were started: four of which (London, Dublin, Clifton, and Manchester) still exist.

This example was followed by the Low Countries; societies were formed, and the Zoological Garden of Amsterdam was founded in 1838, and that of Antwerp in 1843.

The idea was then taken up in Germany, resulting in the opening of the Berlin Zoological Gardens in 1844.

In 1850 the Zoological Gardens of the World thus consisted of eleven institutions:—Schönbrunn, Madrid, Paris, London (Regent's Park and Surrey), Dublin, Clifton, Manchester, Amsterdam, Antwerp and Berlin.

But in the second half of the nineteenth century such institutions began to be quickly established, not only in Europe, but also in Australia, America, Asia, and, finally, Africa. Although from time to time some of these have closed, others are always coming into existence, and the aggregate number continues to increase. The number of fairly large public Zoological Gardens existing in 1908 may be, approximately, taken as fifty-seven, but including smaller collections of animals, kept up in Botanical Gardens and Public Parks, it reaches a total of ninety-five: but as there are probably a certain number of institutions of the existence of which I may be, unfortunately, ignorant, it may be calculated that the total number of standing menageries exceeds one hundred.

Many fine private collections of living wild animals also exist, notably that of His Grace the Duke of Bedford at Woburn Abbey, but these do not come within the scope of this present article.

I would like to be allowed to take this opportunity of acknowledging my sense of obligation to the many kind friends in many lands by whose help I have been enabled to collect the material for this compilation: especially am I indebted to my brother, Mr. Victor A. Flower, who when travelling in Europe, Asia and America, has been so good as to always send me notes on the various Zoological Gardens that he has visited.



II. EARLY ZOOLOGICAL GARDENS.

The ancient Egyptians, as is profusely demonstrated by inscriptions and mummied remains, kept various species of wild animals in captivity, but the first Zoological Garden properly so called appears to have been established in very early times in China. This institution was founded by Woo-Wang (Wong-Wang), the first Emperor of the Chow (Tscheu) Dynasty, who ruled over the northern parts of China rather more than a thousand years before the Christian era. It is noteworthy that the Chinese, thus early realizing the educational value of such an institution, called it "The Intelligence Park."

In Greek and Roman times, as is well known, collections of wild beasts were made in foreign lands and brought to the chief towns for exhibition. This was not done however from purposes of interest in the animals themselves or for the cause of science, but for display and public slaughter. It is recorded that Lions, Leopards, Bears, Elephants, Rhinoceros, Antelopes, Giraffes, Camels, Hippopotamus, Ostriches and Crocodiles, in incredible numbers, were killed in the arenas of Rome: killed either in mutual combat, or at the hands of professional gladiators or condemned criminals and slaves, in order to gratify the popular appetite for sensation.

An exception to this brutality can however be made in the case of Alexander the Great (356-323 B.C.) who, it appears, caused extensive collections of rare and unknown animals to be transmitted to his old tutor, the great philosopher and zoologist Aristotle (384-322 B.C.).

In later times Royal Personages frequently kept menageries of wild animals, aviaries of birds and ponds of fish: partly for sport, partly as pets and partly for exhibition to their personal guests and visitors.

In these collections, many of which still exist, was the origin of the modern Zoological Gardens.

In Europe the public Zoological Garden may be said to have gradually evolved from the Royal menagerie, but in America a period of three hundred and thirty-eight years intervened between the overthrow of the Imperial Mexican Menagerie in

1521, and the foundation of the Philadelphia Zoological Society in 1859.

In England the first recorded Royal Menagerie was at Woodstock, Oxfordshire, in the time of King Henry I. (1100-1135). This was transferred to the Tower of London, apparently in the reign of Henry III. (1216-1272), and kept up there till after 1828. A second English Royal Menagerie existed at Windsor. Kew should perhaps also be mentioned here: the famous Botanical Gardens, founded privately in 1551, which are now about two hundred and fifty acres in extent, at one period contained a menagerie. In a book entitled 'The Picture of London for 1808' are the following particulars concerning the collection of animals then kept in Kew Gardens:—"The Aviary contains a large collection of birds of all countries. In the Flower-garden are to be seen all kinds of beautiful flowers, and in its centre a bason of water, well stocked with gold fish. The Menagerie contains Chinese and Tartarian pheasants, and various large and exotic birds, with a bason stocked with waterfowl, in the centre of which is a pavilion in the Chinese manner" (*vide* S. Goldney, 'Kew Gardens,' London 1907).

In France King Philip VI. (1328-1350) had a menagerie in the Louvre at Paris in 1333. Charles V. (1364-1380) had menageries and aviaries at Conflans, Tournelles and in Paris (*vide* E. T. Hamy). Louis XI. (1461-1483), who is said to have introduced and established the Canary-bird in Europe, formed a menagerie at Plessis les Tours in Touraine. After the death of Louis XI. the Royal French Menagerie was re-established at the Louvre, special missions were sent to North Africa &c. to obtain specimens, and the collection was rapidly growing, when on the 21st of January 1583 the entire menagerie came to a violent end: Henry III. (1574-1589) saw in a dream Lions, Bears and Dogs tearing himself to pieces, and in consequence "had all the Lions, Bulls, Bears &c. killed with shots of arquebus" (*vide* E. T. Hamy). Henry IV. (1589-1610) kept up a very small menagerie, but one which included an Elephant. Louis XIII. (1610-1643) kept some mammals and birds at his hunting lodge at Versailles, and his son Louis XIV. (1643-1715) in 1663 founded the celebrated Versailles menagerie, the "Menagerie du Parc." During the first twenty-five years of its existence this collection received

very numerous additions, particularly from the French Consul at Cairo. The stock of animals during this period is said to have reached "several thousands."

For nearly a hundred years this Versailles menagerie appears to have been kept in good order, and was of the greatest value to the zoologists of those times. But during the later years of Louis XV. (1715-1774) it fell to a very low ebb of efficiency, and abuses were prevalent. It is said that a Camel was supplied, at the cost of the State, with six bottles of Burgundy wine daily, and that when the animal died a soldier of the Swiss Guard petitioned to be given the vacant billet of Court Camel.

In October 1789 the menagerie was almost destroyed by the Parisian mob: the only animals that survived this attack were a Senegal Lion, a Dalmatian Hound, an Indian Rhinoceros, a South African Quagga, an Algerian Hartebeest and a Moluccan Pigeon (*vide* E. T. Hamy).

The idea of forming a collection of live animals in the old-established Botanical Garden of Paris is apparently due to Buffon, but he died in 1788 without seeing the realization of his plan.

By the law of the 10th of June 1793 the Paris Museum of Natural History was reorganized, and later in the same year the Jardin des Plantes menagerie was started. The animals were first lodged under the galleries of the Museum, and later on were housed in that part of the Garden between the great Chestnut Avenue and the street now called the Rue Cuvier, known as *La Vallée Suisse*: where their successors still remain.

The first animals reached the Museum on the 4th of November 1793; they were a Sea-Lion, a Leopard, a Civet-Cat and a Monkey, and were at once taken charge of by Étienne Geoffroy Saint-Hilaire, then twenty-one years old. The next day the arrivals included a White Bear and two Mandrills, and in the following spring the few surviving inhabitants of the Versailles menagerie were brought to the Garden.

Of the early German menageries I have been able to obtain but little information. Herr Schoepf mentions, in his 'Gedenblätter,' 1552 as the earliest date when an Imperial menagerie existed, and says that the Dresden menagerie was started by Kurfurst August I. in 1554: up to 1737 the only animals mentioned as having been kept at Dresden are Mandrills, Lions,

Tigers, Leopards, Indian Cats, Bears, Swine and Porcupines, but in 1747 a young Rhinoceros from Bengal was exhibited alive there.

The first recorded Zoological Gardens in the New World were those of King Nezahualcoyotl, the "Hungry Fox" (born about 1403, died about 1475) at his capital of Tezcuco, on the east side of the lake, in Mexico. Prescott, 'History of the Conquest of Mexico' (edition of 1878, p. 85) mentions these Gardens as containing basins of water "well stocked with fish of various kinds, aviaries with birds glowing in all the gaudy plumage of the tropics," and also states that "many birds and animals which could not be obtained alive were represented in gold and silver."

In the following century there were two such Gardens in America: Iztapalapan and Mexico itself. On the 7th of November 1519 Hernando Cortés entered Iztapalapan, then governed by Cuitlahua (Montezuma's brother), and saw its celebrated gardens in their prime. Prescott, p. 261, mentions the "aviary, filled with numerous kinds of birds, remarkable in this region both for brilliancy of plumage and of song," and also the basin "with different sorts of fish."

Montezuma II., Emperor of Mexico (born about 1479, elected King 1502, died 1520), appears to have maintained large Zoological Gardens at his capital (see Prescott, pp. 286, 287). There were extensive gardens "filled with fragrant shrubs and flowers, and especially with medicinal plants." Among the buildings "was an immense aviary, in which birds of splendid plumage were assembled from all parts of the empire. . . . Three hundred attendants had charge of this aviary, who made themselves acquainted with the appropriate food of its inmates, oftentimes procured at great cost, and in the moulting season were careful to collect the beautiful plumage, which, with its many-coloured tints, furnished the materials for the Aztec painter."

"A separate building was reserved for the fierce birds of prey." For the feeding of which Prescott (p. 286) says that five hundred turkeys were allowed per day; but from Oviedo's original account in Spanish, in Prescott's Appendix (p. 679) it appears that these five hundred birds were the daily rations of not only the fifty "Eagles," but also of the carnivorous mammals and of the great Snakes, as bulky as a man's leg.

The main menagerie building was a great hall 150 "feet" long, by 50 wide. Oviedo, in his contemporary account (*op. cit.* p. 679), writes:—"En entrando por la sala, el hedor era mucho é aborrecible é asqueroso" (on entering the hall the stench was detestable and loathsome), a detail which Prescott does not mention, but that we can well imagine to have been true.

Prescott tells us that "The serpents were confined in long cages lined with down or feathers, or in troughs of mud and water. The beasts and birds of prey were provided with apartments large enough to allow of their moving about, and secured by a strong lattice-work, through which light and air were freely admitted." "Ten large tanks, well stocked with fish, afforded a retreat on their margins to various tribes of water-fowl, whose habits were so carefully consulted that some of these ponds were of salt water, as that which they most loved to frequent." There was also "a strange collection of human monsters" and dwarfs.

The destruction, by fire, of the House of Birds, in 1521, is graphically told by Prescott (p. 515).

III. MODERN ZOOLOGICAL GARDENS (*arranged alphabetically under Continents, and in Europe under Countries*).

AFRICA.

1. ALEXANDRIA, EGYPT.—Since 1907 a small menagerie has been maintained by the Municipality in the Nouzha Garden, a beautiful park just outside the city. Entrance is free. The collection is under the care of Monsieur Louis Monfront, Directeur des Parcs et Plantations de la Ville.

2. DURBAN, NATAL.—Municipal menagerie in Mitchell Park.

3. GEZIRA, CAIRO, EGYPT.—His Highness the Khedive Ismail Pasha established a collection of live animals in the gardens of his palace at Gezira. The late Sir William Flower records in his diary of the 2nd of April 1874 seeing there:—"Two African Elephants, seven Giraffes, sixteen Lions (of all ages), three Leopards, two Servals, one Spotted Hyæna, three Nylghaies, four Hartebeests, two Leucoryx, smaller Antelopes, Deer, Kangaroos, Secretary Birds, Flamingos, good collection of Pheasants and fowls, Emu, &c." All that now remains is the Aquarium, built by Ismail Pasha, adjoining his menagerie, which, after having

been untenanted for about a quarter of a century, was reconstructed by the Egyptian Public Works Department and opened to the public in 1902.

4. GIZA, CAIRO, EGYPT.—Ismail Pasha also had magnificent Gardens laid out round his palace at Giza. In one of these Gardens, known as the "Haremlik," which was constructed in about the years 1867–1872, were several aviaries for birds, and, I believe, a few mammals were also kept; but it was not a zoological garden nor were visitors ever admitted to it. In 1891 however, when it was decided to have a Zoological Garden for Cairo, the Government allowed this garden to be used for the purpose, and later in 1898 the area was more than doubled by the addition of part of the adjoining "Selamlik" Garden. The Giza Zoological Gardens are now a Government institution administered by the Public Works Department. The present writer is the Director of these Gardens and of the Giza Aquarium, with Mr. Michael J. Nicoll as Assistant-Director. Annual and special reports are published.

5. KHARTOUM, SUDAN.—The Khartoum Zoological Gardens were started in 1901 in the centre of the city, but moved to their present site on the tongue of land between the White and Blue Niles in 1903. The gardens, which are free to the public, are under the Municipality, but the collection of live animals is under the Game Preservation Department, of which Mr. Arthur L. Butler is Superintendent.

6. PRETORIA, TRANSVAAL.—The Transvaal Zoological Gardens originally started in a yard near Market Square in 1898, and were moved to their present site in 1899. The Director is Dr. J. W. B. Gunning, who is also Director of the Transvaal Museum, which post he has occupied since 1896. An illustrated Guide-book is published.

7. TUNIS.—Dr. P. L. Sclater has recorded (P.Z.S. 1898, p. 280) visiting "the private collection of living animals belonging to the Bey of Tunis at the palace at Marsa." At the time of Dr. Sclater's visit there were some interesting exhibits, but whether this menagerie is still kept up, and if so to what extent it is open to visitors, I have been unable to ascertain.

AMERICA, NORTH.

8. BALTIMORE.—There is said to be a small Zoological Garden in Druid Hill Park, the latter being seven hundred acres in extent.

9. BUFFALO, NEW YORK.—The Buffalo Zoological Gardens started in a small way in 1895, under the supervision of the Park Superintendent. They were reorganized in 1898, and are now under the Park Commissioners, the President in 1908 being Mr. George C. Ginther, and the Secretary Mr. George H. Selkirk. The present Curator of the zoological collection is Dr. Frank A. Crandall, who has been in charge since the 1st of March 1898. An annual report is published.

10. CEDAR RAPIDS, IOWA.—Zoological Gardens established in City Park, 1908.

11. CINCINNATI.—A privately owned Zoological Gardens started in 1875, said to contain a very fine collection. Mr. S. A. Stephen is the Director.

12. CHICAGO.—I am told that the Zoological Garden in Lincoln Park, Chicago, is one of the largest in the world. The Superintendent is Mr. R. H. Warder, who is assisted by Mr. C. B. de Vry as Head Keeper of the Animals.

13. CLEVELAND, OHIO.—The zoological collection was started about 1903; it is situated in Wade Park and managed by the Cleveland Park authorities.

14. DENVER, COLORADO.—Privately owned Zoological Gardens, first opened in 1889. The proprietress for some years was Mrs. Elitch Long. The Gardens are now managed by Mr. E. P. Horne.

15. DETROIT, MICHIGAN.—A small Zoological Garden, and, I am told, an excellent Aquarium, maintained by the State in Belle Isle Park, under the direction of the Commissioner of Parks and Boulevards. Mr. M. L. Hurlbut is Secretary to the Commissioner.

16. KANSAS CITY, MISSOURI.—The Kansas City Zoological Society was organized in December 1907, to maintain a big menagerie in Swope Park. Mr. W. V. Lippincott is President, Mr. H. R. Walmsley Secretary, and Mr. I. S. Horne Director.

17. LOS ANGELES, CALIFORNIA.—Zoological Gardens established in Idora Park, 1908.

18. MEMPHIS, TENN. — Zoological Gardens established in Overton Park, 1908.

19. MILWAUKEE, WISCONSIN. — The Zoological Gardens in Washington Park were started in 1905 with two Bears, three Foxes and some Virginian Deer. In the three years 1906, 1907 and 1908 extraordinary progress seems to have been made, a large collection of animals has been formed, and sufficient financial support has been forthcoming to admit of spending over £12,000 on cages and paddocks. The governing body is the Board of Park Commissioners. Mr. Daniel Erdmann is President, Mr. Frank P. Schumacher is Secretary, Mr. Ed. H. Bean is the Director; he has had charge of the collection since March 1906, when it was still in its infancy.

20. NEW ORLEANS. — A zoological collection was started a few years ago in Audubon Park, but I have been unable to obtain any information as to its progress.

21. NEW YORK (CENTRAL PARK). — The Zoological Gardens in Central Park were founded in 1865; they are supported by the Municipality. This collection is famous for its success in breeding animals, notably Hippopotamus.

22. NEW YORK (BRONX PARK). — The Zoological Park in Bronx Park, under the management of the New York Zoological Society, was founded in 1898. This Society also looks after the New York Aquarium. The present officers are:—Secretary Mr. Madison Grant, Director Dr. William T. Hornaday, Scientific Assistants Messrs. Raymond L. Ditmars and C. William Beebe, Director of Aquarium Mr. Charles H. Townsend. The publications of this Society, bulletins, annual reports, and guide-books are remarkable for the excellence of the photographs of animals by Mr. Elwin R. Sanborn.

23. OKLAHOMA CITY. — Zoological Gardens established in City Park in 1908.

24. PHILADELPHIA. — Zoological Gardens in Fairmount Park, belonging to the Zoological Society of Philadelphia (incorporated 21st March 1859), and managed by a board of twenty "directors," of whom eighteen are elected by the Society and two by the City Councils. The Secretary and General Manager is Mr. Arthur Erwin Brown, and the Superintendent of the Gardens is Mr. Robert D. Carson. An annual report is published, a special

feature of which is the classified list of autopsies made during the year in the Pathological Laboratory.

25. PITTSBURG, PENNSYLVANIA. — Highlands Park is said to contain a good zoological collection.

26. PORTLAND, OREGON. — Zoological Gardens established in City Park in 1908.

27. SAN FRANCISCO, CALIFORNIA. — I have been unable to obtain any recent news of this institution, the existence of which I only know of from an illustrated guide-book that a friend lent me about eight years ago.

28. SPRINGFIELD, MASS. — A small collection in one of the City Parks. Mr. C. E. Ladd, Superintendent.

29. ST. LOUIS, MISSOURI. — Zoological Gardens started in 1903, under the Park system.

30. TACOMA, WASHINGTON. — Free Public Gardens, with a growing zoological collection.

31. TOLEDO, OHIO. — The Zoological Garden, started in 1900, is under the Park and Boulevard Department of the City. Mr. M. L. Moore is Superintendent of Parks and Boulevards. The Board of Park Commissioners is contemplating the removal of the present menagerie to a larger park, and housing it in a permanent fashion.

32. TORONTO, CANADA. — Zoological collection, started about 1900, in charge of the Commissioner, City Parks Department.

33. VANCOUVER, CANADA. — Public Park with small zoological collection (*vide* W. H. D. le Souëf, Zool. Soc. of Victoria, 44th Annual Report (1908), p. 13).

34. WASHINGTON, D.C. — An important collection in the National Zoological Park, founded in 1890, under the management of the Smithsonian Institution. Dr. Frank Baker is the Superintendent.

AMERICA, SOUTH.

35. BAHIA, BRAZIL. — A small zoological collection in a public park just outside the town. Mr. M. J. Nicoll visited this garden on the 26th of December, 1902, and tells me that the menagerie then only contained some Peccaries, Parrots, Curassows and a Peacock.

36. BLUMENAU, BRAZIL. — Zoological Gardens opened in 1870; no longer existing.

37. BUENOS AIRES.—Municipal Zoological Gardens. Founded by General Sarmiente in 1874. The present Director is Signor Clemente Onelli. This institution publishes an illustrated guide-book, and a quarterly scientific journal.

38. GEORGETOWN, BRITISH GUIANA.—A menagerie existed at one time in the Botanical Gardens of Georgetown. Manatees, Anteaters and other interesting South American animals were exhibited here.

39. PARA, BRAZIL.—An interesting menagerie attached to the Museum of Natural History and Ethnography, named the "Museu Goeldi," after its well-known former Director Dr. Emilie A. Goeldi. The present Director is Dr. Jacques Huber, and the Superintendent Dr. Emilia Snethlage. A periodical "Boletim" is published by the Museum.

40. RIO DE JANEIRO.—Zoological Gardens under the directorship of Mr. Kirschnur.

ASIA.

41. BANGKOK, SIAM.—In 1896-1898, when I lived in Bangkok, there was a Zoological Garden there, the property of His Majesty the King of Siam, open free to the public on certain days. The collection contained mammals, birds, some fairly large Crocodiles, and small aquaria for fish. From time to time very interesting local animals were exhibited (see P. Z. S. 1900, pp. 369 and 371). I am told that this menagerie no longer exists.

42. BARODA, INDIA.—A zoological collection in the Park, owned by the Maharaja of Baroda, who allows the public to visit it freely.

43. BOMBAY, INDIA.—Zoological collection in the Victoria Gardens. Mr. C. D. Mahaluxmivala, Superintendent. These Gardens are round the Victoria and Albert Museum; the best thing is the enclosure for Lions, an irregular oval space of grass and trees, perhaps about one hundred feet long by sixty wide, surrounded by a railing, but with no roof, and a small sleeping place at one end. The railings are about fifteen feet high, curved inwards at the top, and of very light appearance.

44. CALCUTTA, INDIA.—The large Zoological Gardens at Ali-pore, Calcutta, were founded in 1875. They are well known throughout the world to zoologists, who have not personally visited India, by two useful publications:—

(i). 'Guide to the Calcutta Zoological Gardens,' by the late Dr. John Anderson, F.R.S., 1883.

(ii). 'Handbook of the Management of Animals in Captivity in Lower Bengal,' by Ram Bramha Sányál, 1892.

Rai R. B. Sányál Bahadur, who died on the 13th of October, 1908, will always be remembered in connection with the Calcutta Zoological Gardens, in which he worked for thirty-three years.

This institution is managed by an Honorary Committee, of which Lieutenant-Colonel E. H. Brown, of the Indian Medical Service, is Secretary. Mr. Bejoy Krishna Basu, Veterinary Inspector, was appointed Assistant Superintendent of the Garden by the Government of Bengal on the 25th of February, 1907. An annual report is published.

45. COLOMBO, CEYLON.—A small menagerie is maintained in the Gardens of the Museum, of which Dr. A. Willey is the Director.

46. HANOI, TONKIN.—A collection of live animals is kept in the Botanical Gardens. Monsieur Louis Jacquet, Directeur Jardin botanique de Hanoi, Monsieur Farant, Chef du Jardin.

47. JAIPUR, INDIA.—Small zoological collection.

48. KIOTO, JAPAN.—Municipal Zoological Gardens "which are situated right in the city, the Gardens are nicely laid out and have a splendid Flight Aviary, as well as a good Carnivora House." There is also a Deer Park, with very fine old cedar and pine trees at Nara (*fide* W. H. D. le Souëf, Zool. Soc. of Victoria, 44th Annual Report (1908), p. 12).

49. KURRACHEE, INDIA.—Zoological Gardens of which great things were expected about eleven years ago, but which apparently have not progressed during recent years.

50. LAHORE, INDIA.—A small Zoological Garden is said to exist at Lahore.

51. MANILLA, PHILIPPINES.—Under the Government of Spain a few animals were kept in the Botanic Gardens, but these Gardens became the site of a battle and were completely destroyed.

A certain number of mammals, birds and reptiles are now exhibited alive in the Public Gardens, and it is proposed to have a regular Zoological Garden in Manilla.

52. OSAKA, JAPAN.—When the menagerie in the Singapore Botanic Gardens closed, the Tiger, Crocodile and some other large animals were sent to Osaka: but I have been unable to obtain any information as to what sort of menagerie or garden exists at Osaka.

53. PEKIN, CHINA.—Zoological and Botanical Garden, recently started, or re-started.

54. PUKET, JUNKCEYLON, MALAYA. — The Puket (Tongkah) Government maintains a small Zoological Garden, open free to the public. The collection is said to consist of a Tiger, two Leopards, two Black Panthers and two Crocodiles.

55. RANGOON, BURMA.—The Zoological Garden in the Victoria Memorial Park is managed by the Park Administration. The Secretary is Mr. W. Shircore of Barr Street, Rangoon. I understand that the ground was given by the Government, and the park, &c., laid out with funds subscribed by the public as a memorial to Queen Victoria. The institution was opened by His Royal Highness the Prince of Wales, when in Rangoon, on his last Indian tour.

The Zoological Garden is about fourteen acres in area (but there is already some talk of an extension), and adjoins the Royal Lakes. In the Elephant House there is said to be one of King Theebaw's "White" Elephants.

56. SAIGON, COCHIN-CHINA.—A large garden, botanical at one end, zoological at the other. Monsieur E. Haffner, Director.

57. SINGAPORE, STRAITS SETTLEMENTS. — A very interesting account of the Menagerie at the Botanic Gardens of Singapore, from its foundation in 1859 to its end in 1905, has been written by Mr. Henry N. Ridley, F.R.S., Director, Botanic Gardens, Singapore, and published in the 'Journal' of the Straits Branch, Royal Asiatic Society, No. 46 (December, 1906), pp. 133-194. It is greatly to be hoped that a Zoological Garden may be re-started in Singapore.

58. SOURABAYA, JAVA.—Some sort of a collection of animals appears to have been in existence at Sourabaya, but I have no definite information concerning it.

59. TIMOR DILLI, PORTUGUESE MALAYA. — In the Public Gardens there is a collection of live animals. Mr. W. H. D. le Souëf, Zool. Soc. of Victoria, 44th Annual Report (1908), p. 11, men-

tions that he saw there Monkeys, Deer and Birds, including Cassowaries.

60. TOKYO, JAPAN. — The Japanese Government Zoological Garden is in the large Uyen Park, where are also situated the Imperial Museum, Observatory, Library, &c. Dr. K. Tayama, of the Tokyo Imperial University, acting for Prof. Ishikawa, was good enough to inform me in August 1908 that the Directorship was vacant: I have not yet heard if an appointment has been made. Mr. Henry Scherren, in the 'Field' for the 14th of September, 1907, has given a short account of this collection.

Mr. W. H. D. le Souëf, Zool. Soc. of Victoria, 44th Annual Report (1908), p. 12, mentions that there are also to be seen at Tokyo freshwater Fish and Turtle hatcheries, a small but good Aquarium, and, in the Imperial Botanical Gardens, many aviaries for birds and some waterfowl on the ponds.

61. TRIVANDRUM, TRAVANCORE, INDIA.—The Trivandrum Museum and Public Gardens, of which the menagerie forms part, were founded in 1859. A sketch of the origin and progress of these combined institutions has been written by Mr. H. S. Ferguson, the late Director, and published in the Report on the Trivandrum Museum for M. E. 1075 (A.D. 1899–1900). The present Director, who was appointed on the 2nd of July, 1904, is Lieutenant-Colonel F. W. Dawson.

AUSTRALASIA.

62. ADELAIDE.—The Gardens of the South Australian Zoological and Acclimatisation Society were founded in 1879. The present Director is Mr. Alfred C. Minchin. An annual report is published.

63. MELBOURNE.—The Gardens of the Zoological and Acclimatisation Society of Victoria were founded in 1857. Mr. W. H. Dudley le Souëf is the present Director. An annual report is published.

In Melbourne there is also an Aquarium, where aquatic mammals, birds, and reptiles are kept as well as fish, in the Exhibition Buildings, under the control of the Exhibition Trustees. Mr. James E. Sherrard is the Secretary. This Aquarium was commenced in 1884 and opened in 1885, and is apparently the oldest institution of its kind in Australia. Others have

subsequently been established at Sydney, at Bondi, and at Coogee.

64. PERTH.—The Zoological and Acclimatisation Gardens at South Perth, Western Australia, were founded in 1898. The President is the Honourable J. W. Hackett, and the Director is Mr. E. A. le Souëf.

65. SYDNEY.—The Gardens of the New South Wales Zoological Society were founded in 1879. The executive officer, whose duties correspond with those of the Directors of the other Australian Gardens, is Mr. A. Sherbourne le Souëf, the Secretary. An annual report is published.

66. WELLINGTON, NEW ZEALAND. — A Zoological Garden has been started at Wellington in 1908. Mr. A. E. L. Bertling is the Superintendent.

EUROPE.

AUSTRIA.

67. CRACOW.—A small menagerie in the Park Krakowski, under the care of the Director of the Botanical Gardens.

68. SCHÖNBRUNN, VIENNA.—The Imperial Menagerie of the Palace of Schönbrunn was founded by Francis I., Emperor of Germany (1708–1765) and Maria Theresa (1717–1780) in 1752.

These Gardens are the property of, and kept up at the expense of, His Imperial Majesty the Emperor of Austria, who allows the public free admittance to the greater part of the grounds. It is not only the oldest Zoological Garden in the world, but one of the very best, and has reached its present high state of efficiency under the charge of Inspector A. Kraus.

69. TROPPAU, AUSTRIAN-SILESIA. — This town has not got a zoological garden, but a trading menagerie, founded in 1867, now owned by Herr Joseph Pilz.

70. VIENNA.—The citizens of Vienna have from time to time been able to see other collections of live animals besides that of Schönbrunn. In 1802 a government menagerie was established, which was accidentally destroyed by fire in 1848. A zoological garden was founded in 1863, but closed in 1866. The "Vivarium," built in 1872, came to an end from want of financial support about December, 1898. Finally in 1901 the Institute of Experimental Biology came into being, and, being assisted by

annual subventions from the Government, will have, we hope, a long and successful career.

The "Tierpark" at Brunn belonging to the Viennese firm of Carl Guderer (established 1867) must also be mentioned.

BELGIUM.

71. ANTWERP.—The beautiful garden and large menagerie of "La Société Royale de Zoologie d'Anvers" are well known. They were founded in 1843. The present Director is Monsieur Michel l'Hoest.

72. BRUSSELS. — Zoological Gardens founded 1851, closed 1878.

73. GHENT.—The Zoological Garden of Ghent was founded in 1851. I knew it well at one time, and was very sorry to hear that it had been closed in 1904.

74. LIEGE.—A small Zoological Garden on an island in the river, founded in 1861, which has been recently closed (1904?).

BRITISH ISLES.

75. BIRMINGHAM. — A zoological garden has existed in the suburbs of Birmingham at some time during the last twenty-five years, but no definite information is at present available.

76. BLACKPOOL.—No zoological garden, but a large menagerie and very fine Aquarium in the "Tower," under the management of Mr. James Walmsley.

77. BRIGHTON.—About ten years ago a prospectus was issued concerning a Zoological Garden about to be started at Brighton, but apparently the idea was not carried out.

The Brighton Aquarium is well known.

78. CARDIFF.—The only public collection of live animals in Wales appears to be a small Zoological Garden recently started by the Municipality of Cardiff.

79. CLIFTON. — The Bristol, Clifton and West of England Zoological Society owns the small but excellent Zoological Gardens on the edge of Clifton Downs, which were founded in 1835. This institution is managed by a Committee of twenty-seven members, Dr. A. J. Harrison being Treasurer and Chairman, Mr. W. C. Beloe Honorary Secretary and Mr. E. W. B. Villiers

the executive Superintendent. Illustrated guide-books and annual reports are published.

80. CRYSTAL PALACE, SYDENHAM. — An aquarium, a small menagerie and some waterfowl in the gardens have been long maintained in this institution: this collection has recently (1907) been augmented by the loan of the large private menagerie belonging to Mr. Robert Leadbetter of Hazlemere Park, Buckinghamshire. An illustrated guide-book of this latter is published.

81. DUBLIN. — An account by Prof. D. J. Cunningham, F.R.S., of the origin and early history of the Royal Zoological Society of Ireland, which was founded in 1830, was published in 1901. The Society is governed by a Council, the President for 1908 being the Right Honourable Jonathan Hogg, the Honorary Secretary is Dr. R. F. Scharff, of the Dublin Museum. Mr. Thomas Hunt, who had been resident Superintendent since February 1890, retired in 1907, and Captain L. C. Arbuthnot was appointed to succeed him, and took over the duties from the 1st of December, 1907. Illustrated guide-books and annual reports are published.

82. EDINBURGH. — A Zoological Garden formerly existed in the capital of Scotland; a short account of what it contained in May 1858 by "W. C. M." was published in the 'Scotsman' for the 15th of September, 1908.

A movement is now on foot to re-start a Zoological Garden in Edinburgh, a provisional Committee has been formed, Messrs. James Anderson and T. H. Gillespie have been appointed Joint-Secretaries and Mr. W. Burn Murdoch the first Treasurer.

83. GLASGOW. — The so-called "Scottish Zoo," founded about 1901, in the New City Road, Glasgow, which belongs to Mr. Bostock (Bostock and Wombwell's Menagerie), is reported to be closing this year.

Mr. William Nicol, ex-Bailie, has recently, in the 'Glasgow Herald' for the 4th of February, 1909, made practical suggestions for a Municipal Zoological Garden in Glasgow.

84. IPSWICH. — The Municipality of the county-town of Suffolk have a small collection of live animals, I am told, in a public park.

85. LIVERPOOL. — A Zoological Garden was founded, if my

information is correct, in Liverpool in 1884 with a capital of £30,000, but closed in 1886.

Two exhibitions of live animals now exist in Liverpool: the Aquarium in the Museum, and Mr. W. S. Cross's trading menagerie in Earle Street.

86. LONDON (REGENT'S PARK).—The Zoological Society of London is *par excellence* the leading institution of its kind in the world, both by reason of its invaluable scientific publications, and for possessing the Zoological Gardens. The Zoological Gardens which from their foundation in 1828 to the present time have proved of such immense value and pleasure to generations of visitors, and which during the many years that they were administered, with such extraordinary ability and energy, by Dr. Philip Lutley Sclater, F.R.S., and the late Mr. Abraham Dee Bartlett obtained the great reputation which they now hold among the practical naturalists of all countries.

The origin and history of the Regent's Park menagerie can be learnt from the 'Record of Progress' published by the Society in 1901, and from Mr. Henry Scherren's book 'The Zoological Society of London' which was published about 1906. The present executive officers are Dr. Peter Chalmers Mitchell, F.R.S., Secretary, Mr. Reginald Innes Pocock, Superintendent, and Mr. Arthur Thomson, Assistant Superintendent.

87. LONDON (SURREY).—The Surrey Zoological Gardens were founded about 1829 by Mr. Edward Cross, the proprietor of the famous Exeter Change menagerie. They were closed in 1856.

88. LONDON (BATTERSEA PARK).—A small collection of deer and birds is maintained in this park, on the south side of the Thames, by the Municipality "London County Council."

89. MANCHESTER.—The Zoological Gardens, Belle Vue, Manchester, are the property of the Messrs. Jennison. The Jennison family have owned and managed this institution since its foundation in 1836.

An illustrated guide-book is published.

90. SOUTHBEND.—A few years ago a menagerie was maintained at the "Kursaal" at Southend in Essex, but apparently no longer exists.

I have heard that there was one also at Margate in Kent.

91. SOUTHPORT.—A Zoological Garden was started at South-

port in Lancashire in 1906, under the joint proprietorship of Mr. Nathan Yates and Mr. W. Simpson Cross. Since 1908 Mr. Yates has been sole proprietor.

DENMARK.

92. COPENHAGEN.—The “Zoologisk Have” of Copenhagen was founded in 1859, and is this year celebrating its “Jubilæum.” Mr. Julius Schiött is Director.

FRANCE.

93. LYONS.—The beautiful Parc de la Tête-d’Or, 114 hectares* in area, was laid out in 1857, but apparently the menagerie was not stocked till 1872. This zoological collection belongs to the Municipality of Lyons and is open free to all visitors. The present Director is Monsieur P. Didier, Médecin Vétérinaire.

94. MARSEILLES. — These Zoological Gardens, founded in 1855, were originally connected with the Jardin d’Acclimatation of Paris, but in, or about, 1898 were taken over by the Municipality of Marseilles, to whom they now belong. They are under the care of Monsieur Pierre Illy, Directeur des Travaux Neufs et Plantations de la Ville.

95. NICE-CIMIEZ.—A small, privately owned Zoological Garden was opened to the public on payment towards the end of the nineteenth century, and was closed about 1906.

96. PARIS (JARDIN DES PLANTES).—As mentioned earlier in this paper the famous menagerie attached to the French Government Museum of Natural History was started in 1793. The present Director of the Museum is Prof. Edmond Perrier. Prof. Edouard Louis Trouessart is in charge of the menagerie (mammals and birds), assisted by Monsieur L. E. Sauvinet. Prof. Léon Vaillant has charge of the reptiles.

97. PARIS (JARDIN D’ACCLIMATATION).—The Jardin zoologique d’Acclimatation is not a government institution, but is owned by a society, and occupies a site, in the Bois de Boulogne, lent by the Municipality of Paris in 1858. This site has to be handed back to the Municipality on the 31st of December, 1962. The buildings were commenced in 1859, and the garden was formally opened by the Emperor Napoleon III. on the 6th of October, 1860. The present Director is Monsieur Arthur Porte.

* A hectare = nearly 2½ acres.

GERMANY.

98. AIX-LA-CHAPELLE.—A small Zoological Garden was opened at Aix about 1886, and closed about 1903.

99. ALFELD-ON-LEINE.—This little town in the Province of Hanover does not possess a zoological garden, but contains two important trading menageries, those of Herr C. Reiche and of Herr Ruhe.

100. BERLIN.—The famous Zoological Gardens of Berlin were founded in 1844. The wonderful collection of mammals and birds that they now contain is too well known to require more than mention here. The Director is Prof. Ludwig Heck, and Dr. O. Heinroth is scientific Assistant.

The Berlin Aquarium is a separate institution.

101. BRESLAU. — One of the chief Zoological Gardens of Europe. Founded 1865. Director, Herr F. J. Grabowsky.

102. CASSEL.—No longer existing. I am not aware of the dates when this garden started or was closed.

103. COLOGNE.—A large Zoological Garden founded in 1860. The site being involved in the scheme of fortification for the defence of the city, the garden authorities were restricted by military conditions in erecting buildings in various parts of the grounds. Certain of the animal houses had to be so constructed that, if necessary, they could be completely cleared away within a given number of hours so as to afford a clear field of fire for the guns of the fortress. Within the last few years however these regulations have been relaxed. The present Director is Dr. L. Wunderlich.

The Aquarium of Cologne is not connected with the Zoological Gardens, but is situated in the neighbouring "Flora" Gardens.

104. DRESDEN. — Zoological Garden in the Grosse Garten, founded in 1861. Director, Comm. Rat. Adolf Schoepf.

105. DUSSELDORF. — Zoologischer Garten "Scheidt-Keim-Stiftung." Founded 1874. Dr. Hermann Bolau, Director. As is the case with several of the German Zoological Gardens, a very short annual report is published.

106. ELBERFELD.—A small Zoological Garden, founded in 1879. Herr Keusch has been Director since about 1903.

107. FRANKFORT-ON-MAIN. — Zoological Gardens founded in 1858. The area of the grounds is small, but the collection of animals is very rich. There is an Aquarium in the gardens. The present Director is Dr. Kurt Priemel.

108. HALLE-ON-SAAL. — Zoological Garden founded in 1901, and rapidly growing under its first Director, Dr. G. Brandes. An illustrated popular periodical is published.

109. HAMBURG. — One of the chief Zoological Gardens of Europe. Founded 1863. Director, Prof. Dr. J. Vosseler. Besides guide-books and annual reports, an illustrated popular periodical is published. There is an Aquarium in the gardens.

110. HAMBURG-STELLINGEN. — Herr Carl Hagenbeck's very original Tierpark was formally opened in 1907 at Stellingen ; his well-known trading menagerie had long been established in Hamburg.

111. HAMBURG-GROSSBORSTEL. — The Tierpark of Herr August Fockelmann is a trading menagerie established in the grounds of a country house.

112. HANOVER. — Zoological Garden in the Eilenriede, founded in 1863. Director, Dr. E. Schöff.

113. JENA. — A small Zoological Garden started in 1901, but closed in 1906. Herr Hugo Hahn was the proprietor.

114. KARLSRUHE. — Zoological collection, started in 1864, in Stadt Garten. Herr F. Ries is Garden-director.

115. KÖNIGSBERG. — The Königsberger Tiergarten (founded in 1896), like that of Cologne, has, I am told, had to be laid out in such a manner that in case of war its buildings will not mask the defenders' guns. The collection is said to be a good one, and a large number of fish are kept. The Director is Geh. Comm. Rat. H. Claass.

116. KREFELD. — Zoological Garden founded in 1887, since closed (1884?).

117. LEIPSIG. — A very nice Zoological Garden founded in 1876. The former proprietor and present Director is Comm. Rat. E. Pinkert.

118. LIMBURG-ON-LAHN. — This town has no zoological garden, but is the headquarters of Herr J. Menges, the well-known dealer in wild animals.

119. LÜBECK. — A small Zoological Garden about which I am

in some doubt, as I have been told it was closed in 1904, but also heard it "well spoken of" in 1907.

120. MÜLHAUSEN.—A small Zoological Garden founded in 1868, but nearly destroyed in 1870, when it became the site of an encounter between the French and German troops. It is now under the Municipality, Herr H. Schwantge being the Superintendent.

121. MÜNCHEN-GLADBACH.—A small Zoological Garden formerly existed at this town.

122. MUNICH.—The Zoological Garden founded in 1863 appears to have come to an end in 1866. A new institution is now in process of formation.

A collection of deer and waterfowl has long been maintained at Nymphenburg, in the neighbourhood of Munich.

123. MÜNSTER.—The Westphalian Zoological Gardens were founded in 1875. Herr Heinrich Goffart is the Inspector in charge. Dr. H. Recker, the Director of the Natural History Museum of the Province, and other local gentlemen form an honorary committee of management.

124. POSEN.—Zoological Garden started in 1881. Herr Max Meissner is Director.

125. SOLINGEN.—A small Zoological Garden owned by Wittwe G. Bayer.

126. STETTIN.—The small Zoological Garden of Stettin appears to have had a chequered career; originally opened in 1882, it closed in 1884, was re-started, but closed again in 1903, but was open in 1907 with however a collection of only about six mammals and a few dozen birds, and these mostly domestic, I am told.

127. STUTTGART.—The Zoological Gardens of the capital of Würtemberg have had various changes both of management and of site. The old Royal Menagerie dates from 1812. The garden that became so well known under the Directorship of Herr A. Nill from 1870. The existing garden of which Herr Theodor Widmann is proprietor is only a few years old.

128. ULM-ON-DANUBE. — There is no zoological garden at Ulm, but at Donautal is the trading Tierpark and wild animal depôt of Herr Julius Mohr, jun.

GREECE.

129. ATHENS. — Zoological Gardens. Dr. W. Germanos, Director.

HOLLAND.

130. AMSTERDAM. — The Society "Natura Artis Magistra" owns the great institution, founded in 1838, which comprises not only a large menagerie and gardens, but also a museum of general zoology, a museum illustrating the fauna of Holland, an ethnographical museum, a very good library, and one of the chief aquariums of the world. The present Director is Dr. Coenraed Kerbert, and the Librarian Mr. G. Janse.

131. HAGUE. — Small Zoological Gardens, founded in 1863, belonging to the Koninklyk Zoölogisch Botanisch Genootschap. A peculiar feature of the organization of this society is that the resident executive officer may only hold office for a very limited period; thus in the last nine years the Directorship has been held in succession by Major D. N. Dietz, Mr. L. J. Dobbeltmann and Mr. J. W. van de Stadt. A detailed annual report is published.

132. ROTTERDAM. — The Rotterdamsche Diergaarde was founded in 1857. The present Director of this well-known institution is Dr. Johannes Büttikofer.

HUNGARY.

133. BUDA-PEST. — Zoological Gardens founded 1867, temporarily closed 1907.

ITALY.

134. FLORENCE. — In 1487 "Malfota, Envoy of the Sultan of Egypt, Kaitbai," brought a Giraffe alive to Florence for Lorenzo de Medicis (*vide* E. T. Hamy); and other foreign animals have been kept in captivity there from time to time. In recent years I have heard the "Zoological Gardens" of Florence spoken of, but have no definite information on the subject.

135. GENOA. — In 1903 I saw a small collection of animals, that might be almost called a Zoological Garden, in the beautiful Di Negro Gardens at Genoa, adjoining the famous Zoological Museum of which the Marquis Doria is Director.

136. PALERMO, SICILY. — I have been told that there is a collection of wild animals in a garden, or park, near Palermo, but from information kindly supplied by the Zoological Museum of Palermo, I learn that there is no zoological garden there.

137. ROME.—A Zoological Garden is now being formed.

PORTUGAL.

138. LISBON.—Jardim Zoologico e de Acclimação em Portugal. Sociedade Anonyma de Responsabilidade Limitada. The collection is in the Parque das Laranjeiras at Lisbon. Conselheiro José Joaquim Ferreira Lobo is the President of the Board of directors.

RUSSIA.

139. HELSINGFORS, FINLAND.—Zoological Garden founded in 1888. Kapten M. Tamslander is the present Director.

140. MOSCOW.—Imperial Zoological and Botanical Gardens founded in 1864. Monsieur Vladislav Andrevitch Pogogersci is the present Director.

141. ST. PETERSBURG.—Zoological Gardens founded in 1871.

142. WARSAW, POLAND.—I have been unable to obtain any information about this collection, and imagine that it no longer exists.

SPAIN.

143. BARCELONA.—Municipal Zoological Park started in 1892. Senor Francisco de A. Darder y Llimona is the Director.

144. MADRID.—The venerable Zoological Gardens of Madrid date from 1774. Senor Luis Cavanna is the present Director of the "Parque Zoológico del Retiro."

145. XERES.—Zoological Garden founded in 1864, owned by a society or company. This institution was apparently still going in the "eighties," but I have no certain news of when it ceased to exist.

SWEDEN.

146. SKANSEN, STOCKHOLM. — Zoological Gardens, in connection with the Museum, started in 1891. Dr. Alaric Behm is the Director. Illustrated guide-books are published.

SWITZERLAND.

147. BALE.—Zoological Gardens founded in 1874. Dr. G. Hagmann is the present Director. Annual reports and guide-books are published.

148. ST. GALLIEN. A small collection chiefly of European animals.

149. ZURICH.—A small collection, chiefly of foreign animals, was formed in 1902, but came to an end in 1906 (*vide* G. Loisel).

TURKEY.

150. CONSTANTINOPLE.—A collection of live animals in a garden belonging to His Imperial Majesty the Sultan. I do not know to what extent visitors are admitted.

Addenda.

Four Zoological Gardens should be added :—

1. BUCHAREST, ROUMANIA.
2. HALIFAX, YORKSHIRE, ENGLAND.—To be opened in May 1909 at Chevinedge, Salterhebble, near Halifax.
3. JOHANNESBURG, SOUTH AFRICA.—Zoological Garden in Herman Eckstein Park.
4. SZECHUEN, CHINA.—Zoological Garden in newly laid out public park.

IV. BIBLIOGRAPHY.

1829. E. T. Bennett : 'The Tower Menagerie.' London.
1866. F. Schlegel : 'Die Zoologischen Gärten Europas.' Breslau. I have been unable to see a copy of this book.
1878. P. L. Martin : 'Die Praxis der Naturgeschichte,' III. Weimar.
1886. A. Schoepf : 'Gedenklblätter.' Dresden.
1890. 'Lidt Zoologisk-Have Statistik.' Copenhagen.
1898. E. T. Hamy : 'The Royal Menagerie of France.' Washington (Smithsonian publication, 1155).
1903. C. V. A. Peel : 'The Zoological Gardens of Europe.' London.
1906. S. S. Flower : 'Report on Mission to Europe, 1905.' Cairo.
1907. G. Loisel : 'Rapport sur une Mission scientifique dans les jardins et établissements zoologiques publics et privés du Royaume-Uni de la Belgique et des Pays-Bas.' Paris. Ditto : 'De l'Allemagne, de l'Autriche-Hongrie, de la Suisse et du Danemarck.' Paris.
1908. S. S. Flower : 'Notes on Zoological Collections visited in Europe, 1907.' Cairo.
1908. G. Loisel : Articles in the 'Revue scientifique' for the 3rd and 10th of October, 1908. Paris.

NATURAL HISTORY RECORD BUREAU (1908):
THE MUSEUM, CARLISLE.

By D. LOSH THORPE & LINNÆUS E. HOPE, Keepers of the Records.

MANY notes continue to be sent in to the Bureau, and though the number of contributors is not large—that is to be expected—a knowledge sufficient to enable an observer to identify at sight our local fauna, either mammal, bird, reptile, or fish, is not to be gained in a few hours. The tendency in some quarters to accept nature notes and records unreservedly has nothing to recommend it, but is greatly to be deprecated.

The majority of our records naturally relate to ornithology, birds being perhaps the most attractive class to the nature student, and many interesting notes are herewith given.

We are glad to note that the Cumberland County Council, realizing the need for a more detailed order respecting the protection of the smaller wild birds, has curtailed the season during which these birds may be caught, and also given protection to their eggs. We also note with satisfaction that the charming but now somewhat rare Goldfinch is placed under complete protection (neither bird or egg may be taken at any season), and that birdcatching is prohibited on Sundays.

A most interesting feature of bird-life occurred in the early months of the year, following a spell of fairly seasonable weather in March and early April, during which many of our resident birds paired, and some few summer migrants arrived. Winter again set in on April 24th, when we had four inches of snow followed with frost for several days, with cold east and north-east winds.

On April 24th we had the unusual phenomenon of Swallows flitting over the snow-covered ground, and young Thrushes hopping amongst the snow. During the night of April 23rd eighteen to twenty degrees of frost were registered, and at Head's Nook two nests of young Thrushes were reported to be frozen to death.

With the approach of May the wind changed, and the weather

became mild, a change which was quickly noted by all wild life. On the nights of April 30th and May 1st the largest migration of birds recorded for many years passed over Carlisle. Migration had been retarded during the previous cold and stormy weather, and birds appeared to be passing over in one great mass migration. Between eleven and twelve o'clock of the night of May 1st the air seemed full of birds; there was an incessant chorus all round, and from out the babel were recognized (D. L. T.) the notes of Curlew, Oystercatcher, Redshank, Black-headed Gull, Geese, Mallard, Wigeon, Twite, and Warblers; even the House-Sparrow was on the move, one flying against the house-wall at Loshville as Mr. Thorpe was entering. During the following few days the Blackcap, Garden-, Sedge-, and Willow-Warblers were noted, and also Lesser Tern, Redstart, Swift, Spotted Flycatcher, Common Whitethroat, and Yellow Wagtail; the Cuckoo and Corn-Crake were also heard.

On May 6th the Whooper Swan, which had returned to the Eden on Feb. 1st, appeared to be restless; on the following day it was missing. We have in previous reports commented upon this interesting and most unusual occurrence.* The bird has now returned in 1909 for the fifth time, the date of its arrival being Feb. 28th, exactly four weeks later than last year (1908), which in turn is two months later than the date of its arrival in the previous winter. The dates of its arrival and departure up to the present are as follows:—Arrived (in young plumage), December, 1904, left May 8th, 1905; returned Nov. 16th, 1905, left April 29th, 1906; returned Nov. 30th, 1906, left May 7th, 1907; returned Feb. 1st, 1908, left May 6th, 1908; returned Feb. 28th, 1909. Thus it is seen that, although the dates of leaving are fairly uniform, the dates of arrival vary considerably, and have been later each year since its first arrival in December, 1904. On the last two occasions (Feb. 1st, 1908, and Feb. 28th, 1909) its arrival was followed by cold wintry weather, though previously the weather had been comparatively mild, tending to show that its arrival is to a great extent controlled by climatic or atmospheric conditions.

Strangely enough, its return was reported to us in December, 1908, but the bird was not afterwards seen. It was subsequently

* Cf. Eric B. Dunlop, *Zool.* 1906, p. 193.

thought that the bird had arrived but had been killed; happily this rumour proved incorrect, when the bird actually arrived in February of this year.

We are frequently asked, "Where does this bird spend its summer?" A most difficult question to answer; but we know that the summer breeding range of the Whooper is bounded on the south by Iceland and Lapland.

This bird has probably not yet paired or bred, and it will be interesting to find what occurs when that does happen. We are sometimes asked if it is not likely to pair with the Mute Swans. We do not consider it likely, as it is a purely wild bird, and the migratory instinct will be too strong for it to resist so far as to spend the summer on the Eden. Pinioned birds have been known to breed in captivity, and Cuvier (Ann. Mus. Hist. Nat. xii. p. 119) describes a case of hybridisation between a pinioned Whooper and a Domestic Goose.

In August and September most of our usual autumn visitors made their appearance, perhaps not in such large numbers as usual, an exception being the Spotted or Dusky Redshank (*Totanus fuscus*), a flock of seven being seen at one time by Mr. Nicoll, the most he has ever seen together. The same good observer saw on April 8th a Great Skua, the fourth example he has seen on the Solway; it was also seen by other observers, and, like the one recorded by T. C. Heysham, was seen in the act of killing a Gull.

In June a large number of Common Scoters spent several days on the Solway; on June 4th we estimated the number of birds in mid-Firth at over one thousand birds. Redwings were very numerous in October.

During the last few weeks of the year cold wintry weather prevailed, and on Dec. 29th snow fell, accompanied by stormy conditions; on the 30th Mr. W. Nichol saw a fine sight for a wildfowler, Bewick's Swans, Bean Geese, Barnacle Geese, Mallards, and several thousands of Oystercatchers being huddled together for shelter on a small patch of sand at Cardurnock, on the Bowness promontory.

A new Batrachian—the Palmate Newt (*Molge palmata*)—was added to the Lake District list, being recorded for the first time for Westmorland in February, 1908.

We append a selection of the notes and records sent in to the Bureau:—

1908.

January 1st.—A Shag was picked up dead at Crosby-on-Eden (T. H. Hodgson).

4th.—A Red-throated Diver on Windermere (W. E. B. Dunlop).

8th.—Common Scoter (pied variety) shot at Silloth (W. Nichol).

14th.—Green Sandpiper near Silloth (W. Nichol).

18th.—A flock of eleven Bewick's Swans near Silloth (W. Nichol). A Great Crested Grebe shot near Silloth (W. Nichol).

February 2nd.—Sky-Lark singing near Stanwix (D. Losh Thorpe).

3rd.—Palmate Newts (larval stage) obtained near Windermere (W. E. B. Dunlop).

23rd.—Four Shore Larks seen at Silloth (W. Nichol).

March 2nd.—Lapwings seen near nesting ground, Lake District (W. E. B. Dunlop).

12th.—Flock of one hundred White-fronted Geese, some Bean Geese, and a Grey Lag Goose seen at Skinburness (W. Nichol).

17th.—A single Common Scoter on the Solway, also many Wigeon and Mallard on northward migration (W. Nichol).

19th.—A flock of Bean Geese flying north-east over the Solway (W. Nichol).

28th.—A Mistle-Thrush's nest had four eggs at this date near Stanwix (J. B. Cairns).

April 4th.—First Wheatear of the season observed at Skinburness (W. Nichol).

6th.—A Thrush's nest had four eggs near Stanwix (L. E. Hope).

8th. A Great Skua, the fourth recorded, seen on the Solway (W. Nichol). Two Wheatears seen on the golf-course, Silloth (D. Losh Thorpe).

9th.—Sand-Martin seen at Carlisle (W. H. Little).

10th.—Wheatear seen at Windermere (W. E. B. Dunlop).

12th.—Swallows and House-Martins seen at Silloth (D. Losh Thorpe). A Thrush's nest with four eggs at Blackhall (W. Marchington). A Peregrine Falcon's eyrie has four eggs, Lake District (W. E. B. Dunlop).

14th.—Whinchat seen at Silloth ; a Peregrine flying across the Solway (D. Losh Thorpe). Redshanks in a field near Stanwix (L. E. Hope).

17th.—Chiffchaff heard at Windermere (W. E. B. Dunlop).

20th.—A pair of Hawfinches seen in a garden at Wetheral (Rev. A. Scott). Long-tailed Tit nesting at Head's Nook (Mr. Armstrong).

21st.—Goldeneyes seen on Thirlmere (W. E. B. Dunlop).

22nd.—A pair of Willow-Warblers seen at Windermere; snow fell heavily on this date (W. E. B. Dunlop). A fully-built nest of Golden-crested Wren at Head's Nook (Mr. Armstrong).

23rd.—A Mistle-Thrush's nest at Windermere contained four newly-hatched young (W. E. B. Dunlop). Six Swallows seen at Etterby (W. H. Little).

24th.—Two nests of young Thrushes frozen to death at Head's Nook; eighteen degrees of frost registered (Mr. Armstrong).

25th.—A small flock of Swallows and Sand-Martins arrived at 2.30 p.m. at Caldew Foot, on the Eden. They had gone again at 5 p.m. (D. Losh Thorpe).

26th.—About a dozen Swallows at Caldew Foot (D. Losh Thorpe).

27th.—Swallows and Sand-Martins at Caldew Foot to-day (D. Losh Thorpe).

28th.—Swallows seen at Head's Nook (Mr. Armstrong). About one hundred Barnacle Geese are on Skinburness Marsh (W. Nichol).

29th.—Cuckoo heard near Silloth (W. Nichol). Common Sandpiper seen near Windermere (W. E. B. Dunlop). Willow-Warbler seen at Head's Nook (Mr. Armstrong). Cuckoo heard at Head's Nook (J. Sewell).

31st.—Wigeon breeding at Bassenthwaite (W. J. Farrer).

May 1st.—Swallow, House-Martin, and Yellow Wagtail seen near Windermere; Goldeneyes still on Thirlmere (W. E. B. Dunlop). A Buzzard's nest near Windermere has three eggs (W. E. B. Dunlop). Common Sandpiper and a single Willow-Warbler noted at Wetheral (T. Harrison). Great migration of birds over Carlisle; notes of Curlew, Oystercatcher, Redshank, Black-headed Gull, Geese, Mallard, and Warblers were heard (D. Losh Thorpe). Lesser Terns have arrived on the Solway;

Turnstones and Whimbrel are passing north (W. Nichol). Willow-Warbler seen at Botcherby (W. H. Little).

2nd.—Blackcap, Garden-, Sedge-, and Willow-Warblers observed on Etterby Scaur (D. Losh Thorpe). Willow-Warblers numerous at Wetheral; the day previous only one bird was seen (T. Harrison). Redstart seen; Cuckoo heard at Windermere (W. E. B. Dunlop). Yellow Wagtail seen in Carlisle (D. Losh Thorpe). Seven Swifts seen at Botcherby (W. H. Little). Corn-Crake heard at Bulgill (W. Little). Cuckoo heard near Carlisle (D. Losh Thorpe).

4th.—Cuckoo heard near Chatsworth Square, Carlisle (J. Steele). Swifts seen near Windermere (W. E. B. Dunlop). A Cuckoo heard calling in the Abbey grounds (Rev. Canon Bower).

5th.—Two Swifts seen at Carlisle (Major Ferguson).

6th.—The Whooper Swan on the River Eden appeared restless; the following day it was missing (D. Losh Thorpe). Fieldfares are still in the Lake District (W. E. B. Dunlop). The Peregrine's eggs noted on April 12th are now hatching (W. E. B. Dunlop). The Spotted Flycatcher and Common Whitethroat have arrived near Windermere (W. E. B. Dunlop). Corn-Crake heard near Carlisle to-day (D. Losh Thorpe).

15th.—Sand-Martins first seen near Windermere (late date) (W. E. B. Dunlop).

16th.—Young Ravens are nearly ready to leave the nest, Lake District (W. E. B. Dunlop).

18th.—Grasshopper-Warbler heard at Burgh to-day (W. Tremble). A flock of about thirty Whimbrel are on the Solway (W. Nichol). A pair of Shovelers and a pair of Wigeon were seen on Burgh Marsh (W. Tremble).

21st.—A pair of Shovelers nesting near the River Esk (L. E. Hope). A nest of the Lesser Tern on the Solway had one egg (W. Nichol).

22nd.—Two White Wagtails were seen at Skinburness (W. Nichol).

28th.—A Richardson's Skua was on the Solway to-day (W. Nichol).

June 4th.—A large flock of Common Scoters were on the Solway to-day; we estimated their numbers at over one thousand birds (L. E. Hope).

9th.—Two Skuas were seen on the Solway, too far off to identify the species (W. Nichol).

10th.—A fine adult Buffon's Skua was seen on the Solway; also six Velvet Scoters near Silloth (W. Nichol).

14th.—The young Peregrine Falcons in the eyrie noted April 12th and May 7th have now left the nest, Lake District (W. E. B. Dunlop).

26th.—Garden-Warbler sitting on five eggs in Wetheral Woods; the fifth year in succession I have seen this species there (T. Harrison).

July 10th.—A flock of Bar-tailed Godwits are now on the Solway, many of them in summer dress (W. Nichol).

15th.—Great Spotted Woodpecker (immature bird) near Windermere (W. E. B. Dunlop).

19th.—Three Dotterel seen in Lake District to-day (G. F. Saul).

23rd.—A Jackdaw built a nest in the carriage-house at Eden Brow, which reached from the floor to a loophole, a height of seven feet; it partly rested against a carriage, and filled up the space between it and the wall with nesting material (J. H. Martindale).

31st.—Red-necked Grebe seen at Anthorn (James Smith).

August 1st.—A pied Rook and an albino Starling seen near Windermere (W. E. B. Dunlop).

5th.—Curlews were last seen on the hills to-day (W. E. B. Dunlop). Three Greenshanks seen at Silloth (W. Nichol).

31st.—Wild Geese on migration were passing over Carlisle this night (T. L. Johnston).

September 12th.—Two Peregrines are frequenting the vicinity of Skinburness, and many autumn visitors have arrived, including five hundred Bar-tailed Godwits, three hundred Knots, Sanderlings, and Curlew Sandpipers (W. Nichol).

19th.—A flock of about fifty Teal are on the Solway (W. Nichol).

22nd.—Two Red-breasted Mergansers and a Greenshank seen on the Solway (W. Nichol).

27th.—A flock of seven Spotted Redshanks near Skinburness, and a small flock of six Curlew-Sandpipers (W. Nichol).

30th.—The Barnacle Geese have arrived on Long Newton Marsh (W. Nichol).

October 5th.—A flock of about forty Bean Geese seen near Silloth. I found the remains of a pied Lapwing, which had apparently been killed by a Falcon (W. Nichol).

7th.—Three Red-breasted Mergansers seen near Silloth (W. Nichol).

12th.—Fieldfares seen at Stanwix (L. E. Hope).

14th.—Two Little Stints seen near Skinburness (W. Nichol).

17th.—Redwings arrived at Windermere (W. E. B. Dunlop).

19th.—Pied Lapwing seen near Skinburness (W. Nichol). Bramblings arrived at Windermere (W. E. B. Dunlop).

21st.—Male Goosander in change of plumage near Bowness (Rev. L. D. Mitton).

22nd.—Large numbers of Redwings in a wet field near Stanwix (L. E. Hope).

23rd.—A Honey-Buzzard was shot at Scotby to-day. This species has not been reported in Cumberland for about forty years (A. Sutton).

30th.—Snow-Bunting and several Bewick's Swans reported near Silloth during October (W. Nichol).

November 5th.—Beautiful pied Lapwing, almost wholly white, near Silloth (W. Nichol).

7th.—A Swallow was seen at Silloth (Mr. Romney).

8th.—A small flock of Bramblings at Silloth (W. Nichol).

17th.—A Fork-tailed (Leach's) Petrel was picked up in an exhausted condition at Stanwix. It died the following day (A. Sutton).

24th.—Several Fork-tailed Petrels noted in the Lake District (W. E. B. Dunlop).

December 7th.—A flock of eight Grey Lag Geese were seen near Silloth. Large numbers of Wigeon are on the Solway (W. Nichol).

12th.—Great Phalarope shot on the Solway (O. Wilde).

28th–29th.—Tens of thousands of Lapwings flying from north to south across the Solway during snowstorm (W. Nichol).

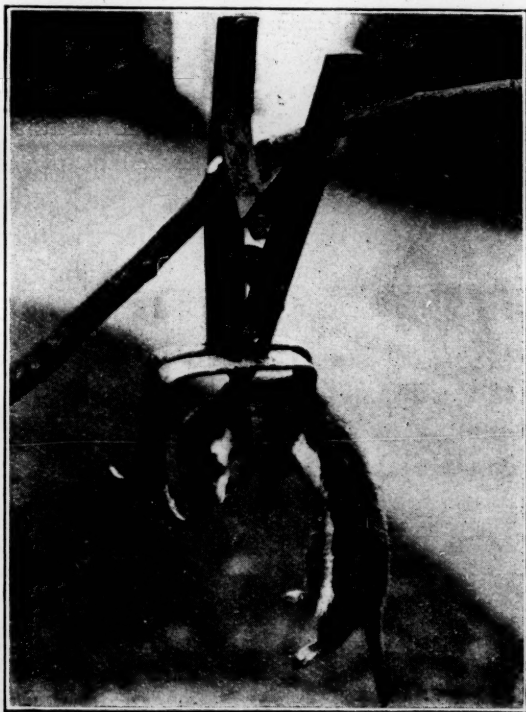
29th.—A Smew was obtained on Windermere (W. E. B. Dunlop).

30th.—About fifty Bewick's Swans, eighty Bean Geese, twenty Bernacle Geese, several thousands of Oystercatchers, and a few Mallards were congregated on a small patch of sand near An-thorn, sheltering during the storm (W. Nichol).

NOTES AND QUERIES.

MAMMALIA.

Weasels caught in Mole-trap.—On April 4th, seeing a Mole-trap off, I pulled it up, and was surprised to find a Weasel caught in it. I took the Weasel out and reset the trap. On April 16th I happened to pass the same place, and noticed that the trap was sprung again. On pulling it up I was astonished to find another Weasel caught.



They were both females. I took the enclosed photograph of the second Weasel in the exact position it was caught in.—F. BARBER-STARKEY (Aldenham Park, Bridgnorth, Shropshire).

AVES.

"Where are our Nuthatches?"—With reference to Mr. Warde Fowler's query (*ante*, p. 155), I may state that Nuthatches have of late years become very scarce in certain woods of Hampshire where

formerly they were abundant. I only refer to woods where human interference is out of the question, and the timber is as it was of yore. In referring to my notes I find that in May, 1892, they were nesting in considerable numbers, and continued common for a few years; but in 1901 I only found one nest; again in 1903 only one nest; the last and only nest in 1904. Since then I have made diligent inquiries about them, as I wanted to photograph the parents at the nesting-site, but have failed in locating a single nest. This very marked falling off in numbers has puzzled me greatly, and I cannot account for it in any way.—J. E. H. KELSO (Holmwood, Hayling Island, Hants).

REFERRING to the reports from Oxford and Hants that there is a scarcity of Nuthatches, I do not notice any difference here, but perhaps, on the contrary, they are even more in evidence than usual. You can see and hear them everywhere, and six out of thirteen nesting-boxes in the garden here were occupied by them, and I know of other nests in trees. I went over to my other place this afternoon (May 4th), and out of twenty-three boxes I examined, eleven were occupied by Nuthatches. I also saw two nests in trees and three in rocks, but I have noticed that most years some species predominate in boxes; one year it is the Great Tit, another the Blue Tit, this year the Nuthatch; some years several Coal-Tits (but they never predominate), others almost none.—E. G. B. MEADE-WALDO (Hever Warren, Hever, Kent).

Late Stay of the Brambling (*Fringilla montifringilla*).—I saw a small flock of Bramblings, about a dozen in all, being birds of both sexes and accompanied by a few Chaffinches, in a fir-wood on the moors near here to-day (April 24th, 1909).—WALTER GYNGELL (13, Gladstone Road, Scarborough).

***Linota linaria* at Hampstead.**—A flock of Mealy Redpolls consisting of some thirty or more birds frequented the Heath here daily from the middle of January till early in April, when they took their departure. They appeared to spend the whole of their time during the day feeding on the ground under the birch trees, and only flying up into the branches on being disturbed. On April 20th I saw and watched here for some time a male Pied Flycatcher (*Muscicapa atricapilla*). The occurrence of this Flycatcher in Middlesex does not appear to have been very often recorded.—H. MEYRICK (Holly Cottage, The Mount, Hampstead, N.W.).

Early Appearance of *Cypselus apus*.—In the evening of April 15th, after a not very bright day, I saw a Swift—I may almost say a

pair of Swifts, but I am not quite certain about the second specimen, as I lost sight of it behind some houses—(I believe the species usually emigrate in pairs), and on the following day I saw a half-dozen or more, the numbers daily increasing until the morning of the 25th, when a very large congregation were careering hither and thither very high in the bright sunshine. The main body seem to have passed on, and those remaining are about their old nesting-places, around which they sweep on rapid wing, with an occasional scream, but not so jubilant and excited as they probably will be shortly when their two, long, rough, white eggs rest securely beneath the thatch.—G. B. CORBIN (Ringwood).

Correction.—On page 158, line four, "Hoopoes" should read "Whoopers," as the context indicates.—G. B. C.

Red-legged Partridge at Yarmouth.—In 'The Zoologist' (1905, p. 186) I contributed a note querying the possibility of a spring movement made by the Red-legged Partridge (*Caccabis rufa*). I have not yet found a satisfactory solution of this debated question; certain it is that in April, and sometimes well into May, this species appears on our sandhills both north and south of Yarmouth at this period of the year, where it provides no small excitement for those who prowl by the seashore and on the sand-dunes. Occasionally, like the Woodcock, this Partridge drops down in most unlikely places, even in crowded localities, and great is the scramble to secure them. Since the 1st of this month (April) four or five have been reported to me as seen near the beach. One was stunned by a stone and secured by the thrower; on the 5th Whiley, a noted Gull-shooter here, picked up a dead bird that had been drowned at sea and washed up by the tide. I saw and examined the bird, sandy and bedraggled, soon after he had found it; it was in good condition, and must have been drowned during the previous night. Whiley told me on the 6th that he had plucked the carcase, and his wife had made a pie of it in company with a savoury morsel of beef; that day he had eaten it for dinner, and declared it "most excellent tack," and he intended "following up" the sandhills with his dog each morning at daybreak in hope of procuring others, dead or alive. He humorously remarked that he should do this in spite of the game laws, for surely they must be immigrants! The prevalent winds for several days past had been easterly and south-easterly, varying in force.—A. H. PATTERSON (Ibis House, Great Yarmouth).

***Edicnemus scolopax* in Cumberland.**—When passing along a portion of the River Eden, near Carlisle, on the morning of March

27th last I noticed, standing upon a small piece of exposed shingle a bird which on closer examination proved to be a Thicknee. After watching the bird's movements for some time I returned to my house (which was close by) for my binoculars to enable me to observe the bird more easily. On my return the bird flew, but pitched again in a field about one hundred yards distant. I had a good view of it through the glass, and also saw it very clearly when resting on the shingle. A second gentleman saw the bird at the same time, and although not sufficient of an ornithologist to identify the species at sight, did so upon seeing a specimen in the Museum. The bird appeared somewhat exhausted, and from its movements and general appearance was a bird on migration, resting and refreshing itself at the river. It is the first record of this species in Cumberland. I have kept this species in confinement, and have also seen it in Norfolk.—D. LOSH THORPE (Hon. Curator, Carlisle Museum).

Goldeneye (*Clangula glaucion*) in Surrey: Correction.—*Vide Zool. ante*, page 156, line 22, for "sure" read "rare."—GORDON DALGLIESH (Brook, Witley, Surrey).

A NATURE STUDY EXHIBITION, organized by the Nature Study Society, will be held at the Royal Botanic Gardens, Regent's Park, N.W., on Friday and Saturday, June 4th and 5th. Open each day from 10 a.m. to sundown. It will include Aquaria, Vivaria, and other means of observing animals, with photographic and microscopic illustrations. Entrance one shilling. Tickets and all particulars may be obtained of Miss Winifred de Lisle, Hon. Sec. of the Exhibition Committee, 58, Tyrwhitt Road, Brockley, S.E.

OBITUARY.

HASTINGS CHARLES DENT.

WE regret to have to announce the death of Mr. Hastings Charles Dent, which took place on March 6th, 1909. He was born in 1855, and was brought up as an engineer, studying at Owens College, Manchester, and subsequently becoming tutor and examiner at the Royal School of Engineering at the Crystal Palace. He laid down the first tramway in Manchester, and also went out to Brazil to make surveys for railways. He visited several other countries, and, being a man of

wide reading and of many interests, he made observations and collected specimens wherever he went. The last few years of his life were spent at South Godstone, Surrey, where he occupied himself in farming. He was a Fellow of the Linnean, Zoological, and Royal Geographical Societies, &c., and his principal work, 'A Year in Brazil,' published in 1888, includes a scientific appendix, containing extensive notes on Meteorology, Zoology (especially Entomology), Botany and Geology, lists of shells, Lepidoptera and Coleoptera, and remarks on Evolution and Mimicry. Several species enumerated are rarities of some scientific interest. Personally, Mr. Dent was a man of extremely generous and straightforward character, and his loss is much regretted by his friends and neighbours.—W. F. K.

NOTICES OF NEW BOOKS.

A Naturalist in Tasmania. By GEOFFREY SMITH, M.A.
Clarendon Press, Oxford.

THIS book is based on a stay of six months in Tasmania during the spring and summer of 1907-8, and the expedition was undertaken at the suggestion of Prof. G. C. Bourne with the object of studying especially the fresh-water life of that island. That this small fauna is of the most interesting and important character is perhaps known better to specialists than to more general naturalists. The Tasmanian Mountain Shrimp (*Anaspides tasmaniae*) finds its nearest allies in some marine shrimps "which have come down to us as fairly common fossils in the sand deposited round the Permian and Carboniferous seas of Europe and North America," but to judge by external appearance there is very little difference in organization between the primitive forms of the Carboniferous period and the present-day *A. tasmaniae*. When Mr. Smith first saw the Mountain Shrimp—to use his own words—"walking quietly about in its crystal-clear habitations, as if nothing of any great consequence had happened since its ancestors walked in a sea peopled with strange reptiles, by a shore on which none but cold-blooded creatures plashed among the rank forests of fern-like trees, before ever bird flew or youngling was suckled with milk, time

for me was annihilated, and the imposing kingdom of man shrunk indeed to a little measure."

The Great Lake possesses two abundant crustaceans—*Paranaspides lacustris* (a new genus and species discovered by Mr. Smith) and *Phreatoicus spinosus*, which stand "in somewhat the same relation to the other Crustacea as the Platypus does to ordinary mammals"; while in the same water, anglers may be interested to learn, there are found Trout which have been captured scaling twenty-five pounds. These, however, are considered by the author as certainly the English Brown Trout (introduced in 1864), attaining these gigantic proportions by the absence of predatory fish such as Pike, and by the superabundance of ground food. It seems, however, that they have increased in size with a diminution in pluck, for "they seldom show any great fight; indeed, the large fish which I saw near the bank of the Shannon were so sluggish that one could poke them with a stick before they would make off."

Mr. Smith naturally could not ignore the peculiar anthropology of Tasmania and its extinct aborigines; the unfortunate Truganini, the last of the true Tasmanians, died in 1876, and her skeleton is preserved in the Museum at Hobart. An excellent plate illustrating crania preserved in the University Museum, Oxford, shows the dissimilarity of those from Tasmania to those of Australia, and their affinities with those from New Guinea and the Andamans. These last affinities are further pronounced by their woolly or "negritic" hair.

Other natural features are lost besides that of man; the vegetation in places is considerably modified, as our author bears witness when he speaks of the bush "which must have clothed Mount Wellington before that mountain was partially tamed by fires and the domesticating hand of man."

This book is well illustrated, and is a tale told by a naturalist in a very excellent manner.

